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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/039,064
Filing Date: January 04, 2002
Appellant(s): GAIDJIERGIS ET AL.

Paul T. Parker
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 29 May 2009 appealing from the Office action mailed 29 April 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner:

- Whether Claims 18-22, 24-30, 38, 39, 41-43, and 45-55 are unpatentable under 35 U.S.C. § 112, first paragraph.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

3,962,941	**Kober, Harald**	**6-1976**
4,580,374	**Quinnell, Geoffrey C.**	**4-1986**
4,246,815	**Hugo, Harding R.**	**1-1981**
4,985,119	**Vinson, Kenneth D. et al.**	**1-1991**
3,914,079	**Kober, Harald**	**10-1975**

Applicant's Admissions of the Prior Art (Specification, [0002] and [0006], filed 15 April 2002)

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim 31-37 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

With respect to Claim 31, lines 4-6 claim a "first active drive member" and a "second drive member." Although the specification as originally filed provides for roller assemblies (see Specification, [0035]), it does not provide for drive members such as clamps which would meet the limitations of the claim. Claims 32-37 are rejected via their dependency.

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kober (U.S. Patent No. 3,962,941) in view of Quinnell (U.S. Patent No. 4,580,374) and applicant's admitted prior art (see Specification, Background section, [0002] and [0006]).

With respect to Claims 18 and 19, Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel having a length, a width and a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches coupled to the punch plate) and a lower platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes; driving the punches at least substantially simultaneously into and through at least a portion of the thickness of the fiber-cement panel to form a plurality of apertures in the fiber-cement panel by ejecting plugs from the fiber-cement panel through the holes in the support plate) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39). As illustrated in Figures 1 and 2, Kober further teaches lowering all of the punch means

8 into fiber plate 3 at substantially the same time (driving the punches comprises penetrating the punches into the fiber-cement panel along the full length of the fiber-cement panel in one stroke of the punches).

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.

Neither Kober nor Quinnell specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.31625 inches. However, the examiner takes Official notice that it was generally well known in the art at the time of the applicant's invention to produce cement-fiber soffit boards having thicknesses of about ¼" to ½" (i.e., 0.25 to 0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

Kober and Quinnell do not appear to explicitly teach that the penetration depth is within the claimed range (e.g., 0.0625-0.1875 inches (without passing completely through)). However, in this regard, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

Kober in view of Quinnell lack or do not expressly disclose performing the punching on a cured fiber-cement panel.

Admission discloses that it is well known to cure a fiber-cement composition and then performing cutting, which would include punching (see Specification, Background section, [0002] and [0006]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Admission's method of punching after curing in Kober's process of punching fiber cement boards in order to overcome problems of drilling, to provide larger opening (see Specification, Background section, [0002] and [0006]), and because Kober is not limited to pre-cured or post-cured punching.

Claims 20-22, 38, 39, 41-43, and 45-55 are rejected under 35 U.S.C. 103(a) as being unpatentable Kober (U.S. Patent No. 3,962,941) in view of Quinnell (U.S. Patent

No. 4,580,374) and applicant's admitted prior art (see Specification, Background section, [0002] and [0006]) as applied to Claims 18 and 19 above, and further in view of Hugo (U.S. Patent No. 4,246,815).

With respect to Claims 20-22, Kober further teaches that each of the punch means 8 comprises a pin 10 (the plurality of punches) carried on a plate 9b removably secured to the upper portion 9a (a flat punch plate) of the upper platen 9 (the punch assembly) (the punch assembly includes a flat punch plate and the plurality of punches project from the punch plate, the punches being spaced apart from one another, and the punches having a first end attached to the punch plate, a second end opposite the first end with a contact face, and a first diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 (the support assembly) includes a plate (a flat support plate) having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11 (the plurality of holes), for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (punches) (the support assembly includes a flat support plate and the plurality of holes extend through the support plate, each hole being aligned with a corresponding punch projecting from the punch plate, and the holes having a second diameter to provide a radial punch/hole clearance between the punches and the holes) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in

the lower platen 5 (driving the punches comprises moving the punches toward the holes and into the fiber-cement panel until the punches eject the plugs from the panel).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes and the claimed spacing of the punches. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell, one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Neither Kober nor Quinnell specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with

a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a punch assembly and a support assembly having the claimed punch/hole clearance in the process of Kober in view of Quinnell as taught by Hugo to provide a punching apparatus with reduced punch wear and breakage as taught by Hugo. Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph [0006].

Specifically, paragraph [0006] of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

With respect to Claims 38 and 42, Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel having a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches having a first cross-sectional dimension coupled to the punch plate) and a lower platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly so that a first side of the panel faces the punch assembly and a second side of the panel faces the support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes having a second cross-sectional dimension) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39).

With regard to the concept of driving the punches through only a portion of the fiber-cement panel without passing the punches completely through the panel, the examiner stipulates that Kober indirectly teaches this concept as further discussed hereafter. Kober further teaches that the upper platen 9 is provided with trimming blades 25 whose cutting edges are engageable against lead anvil strips 26 inset in the trays 7 to trim the edges all around the fiber plate 3 as the array of holes are punched through the fiber plate 3 (column 3, line 65 - column 4, line 2). As illustrated in the Figures, Kober further teaches that the punch means 8 are slightly shorter, but definitely no longer, in length than the trimming blades 25. If the travel of the trimming blades 25 and the upper platen 9 stops when trimming blades 25 engage against lead anvil strips 26 as taught and the punch means 8 are slightly shorter in length than the trimming blades 25, the punch means 8 in the process of Kober would obviously only pass through a portion of the fiber plate 3 and would obviously be prevented from passing completely through the fiber plate 3 as claimed.

Moreover, with respect to teaching that the penetration does not pass completely through, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.
Neither Kober nor Quinnell specifically teaches that the perforations are tapered (i.e., have the first dimension of the punches at the first side of the panel and the second dimension of the holes at the second side of the panel) and that the second cross-sectional dimension of the holes is larger than the first cross-sectional dimension of the punches. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims). As illustrated in the marked-up version of Figure 3 below, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the workpiece W (driving the punches through at least a portion of the thickness of the fiber-cement panel to form a plurality of tapered openings in the fiber-cement panel; driving the punches through at least a portion of the fiber-cement

panel to form a plurality of openings in the fiber-cement panel that have the first dimension of the punches at the first side of the panel and the second dimension of the holes at the second side of the panel) and that the diameter of the die cavity 21 is larger than the diameter of the punch 15 (a plurality of holes having a second cross-sectional dimension larger than the first cross-sectional dimension of the punches). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punch / support arrangement taught by Hugo in the process of Kober in view of Quinnell to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph [0006]. Specifically, paragraph [0006] of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

With respect to Claims 39 and 43, with regard to the concept of driving the punches through only a portion of the fiber-cement panel without passing the punches completely through the panel, the examiner stipulates that Kober indirectly teaches this concept as further discussed hereafter. Kober further teaches that the upper platen 9 is provided with trimming blades 25 whose cutting edges are engageable against lead

anvil strips 26 inset in the trays 7 to trim the edges all around the fiber plate 3 as the array of holes are punched through the fiber plate 3 (column 3, line 65 - column 4, line 2). As illustrated in the Figures, Kober further teaches that the punch means 8 are slightly shorter, but definitely no longer, in length than the trimming blades 25. If the travel of the trimming blades 25 and the upper platen 9 stops when trimming blades 25 engage against lead anvil strips 26 as taught and the punch means 8 are slightly shorter in length than the trimming blades 25, the punch means 8 in the process of Kober would obviously only pass through a portion of the fiber plate 3 and would obviously be prevented from passing completely through the fiber plate 3 as claimed.

Kober, Quinnell, and Hugo do not specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.625 inches. However, the examiner takes Official notice that it was generally well known in the art at the time of the applicant's invention to produce cement-fiber soffit boards having thicknesses of about ¼" to ½" (i.e., 0.25 to 0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

With regard to the concept of driving the punches through only a portion of the fiber-cement panel without passing the punches completely through the panel, the examiner stipulates that Kober indirectly teaches this concept as further discussed

hereafter. Kober further teaches that the upper platen 9 is provided with trimming blades 25 whose cutting edges are engageable against lead anvil strips 26 inset in the trays 7 to trim the edges all around the fiber plate 3 as the array of holes are punched through the fiber plate 3 (column 3, line 65 - column 4, line 2). As illustrated in the Figures, Kober further teaches that the punch means 8 are slightly shorter, but definitely no longer, in length than the trimming blades 25. If the travel of the trimming blades 25 and the upper platen 9 stops when trimming blades 25 engage against lead anvil strips 26 as taught and the punch means 8 are slightly shorter in length than the trimming blades 25, the punch means 8 in the process of Kober would obviously only pass through a portion of the fiber plate 3 and would obviously be prevented from passing completely through the fiber plate 3 as claimed.

Moreover, with respect to teaching that the penetration does not pass completely through, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

With respect to Claims 41 and 45-48, Kober further teaches that each of the punch means 8 comprises a pin 10 carried on a plate 9b removably secured to the upper portion 9a of the upper platen 9 (the punches are arranged in an array and have

a diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 includes a plate having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11, for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (the holes are arranged in a corresponding array and have a diameter) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches along a punch stroke into the fiber-cement panel until the punches eject plugs from the panel in the direction of the punch stroke).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell and Hugo, one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Neither Kober nor Quinnell specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a punch assembly and a support assembly having the claimed punch/hole clearance in the process of Kober in view of Quinnell as taught by Hugo to provide a punching apparatus with reduced punch wear and breakage as taught by Hugo.

With respect to Claims 49 and 50, Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel having a length, a width and a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches having a first cross-sectional dimension coupled to the punch plate) and a lower platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly so that a first side of the panel faces the punch assembly and a second side of the panel faces the support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes having a second cross-sectional dimension; driving the punches through at least a portion of the

fiber-cement panel to form a plurality of openings in the fiber-cement panel) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39).

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.
Neither Kober nor Quinnell specifically teaches that the second cross-sectional dimension of the holes is larger than the first cross-sectional dimension of the punches. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims). As illustrated in the marked-up version of Figure 3 below, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the workpiece W (driving the punches through at least a portion of the thickness of the fiber-cement panel to form a plurality of openings in the fiber-cement panel) and that the diameter of the die cavity 21 is larger than the diameter of the punch 15 (a plurality

of holes having a second cross-sectional dimension larger than the first cross-sectional dimension of the punches). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punch / support arrangement taught by Hugo in the process of Kober in view of Quinnell to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph [0006]. Specifically, paragraph [0006] of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

Neither Kober nor Quinnell specifically teaches pressing a compressible biasing element against the first side of the fiber-cement panel as the punches move along the punch stroke. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 wherein the punch 15 is surrounded by an elastomerically deformable, annular insert 50 having a striking surface 54 for engaging

the upper surface of the workpiece W during punching (pressing a compressible biasing element against the first side of the fiber-cement panel as the punches move along the punch stroke) (column 1, lines 5-9; column 2, lines 38-52; column 3, lines 33-54; claims). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to surround the pins with annular inserts in the process of Kober in view of Quinnell as taught by Hugo to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo).

Kober, Quinnell, and Hugo do not specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.625 inches. However, the examiner takes Official notice that it was generally well known in the art at the time of the applicant's invention to produce cement-fiber soffit boards having thicknesses of about ¼" to ½" (i.e., 0.25 to 0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

Kober in view of Quinnell and Hugo lack or do not expressly disclose performing the punching on a cured fiber-cement panel.

Admission discloses that it is well known to cure a fiber-cement composition and then performing cutting, which would include punching (see Specification, Background section, [0002] and [0006]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Admission's method of punching after curing in Kober's process of punching fiber cement boards in order to overcome problems of drilling, to provide larger opening (see Specification, Background section, [0002] and [0006]), and because Kober is not limited to pre-cured or post-cured punching.

With respect to Claim 51, the discussion of Kober, Quinnell, Hugo and the admitted prior art as applied to claim 49 above applies herein.

Neither Kober nor Quinnell specifically teaches driving the punches completely through the fiber-cement panel to eject the plugs from the fiber-cement panel. However, as illustrated in Figure 3, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the workpiece W (driving the punches comprises passing the punches along a stroke path completely through the fiber-cement panel and ejecting the plugs from the panel in the direction of the punch stroke). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to drive the punches completely through the fiber plate in the process of Kober in view of Quinnell as taught by Hugo to assure that the plugs were completely ejected from the fiber plate.

With respect to Claims 52-55, Kober further teaches that each of the punch means 8 comprises a pin 10 carried on a plate 9b removably secured to the upper

portion 9a of the upper platen 9 (the punches are arranged in an array and have a diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 includes a plate having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11, for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (the holes are arranged in a corresponding array and have a diameter) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches into the fiber-cement panel to form openings).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell and Hugo, one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Note that, as discussed above with regard to claim 49, Hugo further teaches that the punch 15 is driven into the die cavity 21 to eject a frustoconical plug from the workpiece W (driving the punches comprises moving the punches into the fiber-cement panel to form openings having a first dimension at the first side of the panel and a second dimension larger than the first dimension at the second side of the panel).

Neither Kober nor Quinnell specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance

would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kober (U.S. Patent No. 3,962,941) in view of Quinnell (U.S. Patent No. 4,580,374), Vinson et al. (U.S. Patent No. 4,985,119), and applicant's admitted prior art (see Specification, Background section, [0002] and [0006]).

With respect to Claims 24 and 25, Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement (providing a fiber-cement panel having a thickness); depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless chain passing about terminal rollers; passing each of the trays 7 into a press 1 (placing the fiber-cement panel between) comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (a punch assembly; the punch assembly having a punch plate and a plurality of punches coupled to the punch plate) and a lower platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes; driving the

punches through at least a portion of the thickness of the fiber-cement panel to form a plurality of apertures in the fiber-cement panel by ejecting plugs from the fiber-cement panel through the holes in the support surface); and lifting the trays 7 off of the lower platen 5 to pull the board free at the region of the tray holes (withdrawing the punches from the fiber-cement panel without delaminating the fiber-cement panel at the apertures) (column 1, lines 13-17; column 2, lines 53-64; column 3, lines 12-27; column 4, lines 19-39). As illustrated in Figures 1 and 2, Kober further teaches lowering all of the punch means 8 into fiber plate 3 at substantially the same time (driving the punches comprises penetrating the punches into the fiber-cement panel along the full length of the fiber-cement panel in one stroke of the punches). Note that one of ordinary skill in the art would have recognized, when viewing the teachings of Kober as a whole, that the lifting off of the trays would have obviously been performed without any significant delaminating at the apertures.

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.

Neither Kober nor Quinnell specifically teaches that the thickness of the soffit boards is approximately 0.25 - 0.625 inches. However, the examiner takes Official notice that it was generally well known in the art at the time of the applicant's invention to produce cement-fiber soffit boards having thicknesses of about ¼" to ½" (i.e., 0.25 to 0.50 inches) as claimed. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to produce a cement-fiber soffit board having a thickness in the claimed range according the process of Kober in view of Quinnell as was well known in the art to provide a cement-fiber soffit board with good durability and sufficient strength to allow punching of the ventilation slots.

Neither Kober nor Quinnell specifically teaches that the fiber plate may comprise cellulosic material instead of asbestos. However, Vinson et al. teach a method for making fiber-reinforced structures and building materials from water-curable inorganic binders, such as cement and calcium silicate, and fibers wherein the traditional asbestos fibers are replaced with natural cellulosic fibers such as softwood fibers, hardwood fibers and a variety of vegetable fibers (the fiber-cement panel comprising cement, cellulosic material, and a binder) (column 1, lines 11-29). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use cellulosic fibers as a replacement for the asbestos fibers in the process of Kober in view of Quinnell as taught by Vinson et al. to provide a fiber reinforcement with fewer safety and health concerns as set forth in Vinson et al.

Kober, Quinnell, and Vinson do not appear to explicitly teach that the penetration depth is within the claimed range (e.g., 0.0625-0.1875 inches (without passing completely through)). However, in this regard, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober, Quinnell, and Vinson through routine experimentation based upon driving out the plugs.

Kober in view of Quinnell and Vinson lack or do not expressly disclose performing the punching on a cured fiber-cement panel.

Admission discloses that it is well known to cure a fiber-cement composition and then performing cutting, which would include punching (see Specification, Background section, [0002] and [0006]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Admission's method of punching after curing in Kober's process of punching fiber cement boards in order to overcome problems of drilling, to provide larger opening (see Specification, Background section, [0002] and [0006]), and because Kober is not limited to pre-cured or post-cured punching.

Claims 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kober (U.S. Patent No. 3,962,941) in view of Quinnell (U.S. Patent No. 4,580,374),

Vinson et al. (U.S. Patent No. 4,985,119), and applicant's admitted prior art (see Specification, Background section, [0002] and [0006]) as applied to Claims 25 and 24 above, and further in view of Hugo (U.S. Patent No. 4,246,815).

With respect to Claims 26-28, Kober further teaches that each of the punch means 8 comprises a pin 10 (the plurality of punches) carried on a plate 9b removably secured to the upper portion 9a (a flat punch plate) of the upper platen 9 (the punch assembly) (the punch assembly includes a flat punch plate and the plurality of punches project from the punch plate, the punches being spaced apart from one another, and the punches having a first end attached to the punch plate, a second end opposite the first end with a contact face, and a first diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 (the support assembly) includes a plate (a flat support plate) having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11 (the plurality of holes), for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (punches) (the support assembly includes a flat support plate and the plurality of holes extend through the support plate, each hole being aligned with a corresponding punch projecting from the punch plate, and the holes having a second diameter to provide a radial punch/hole clearance between the punches and the holes) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in

the lower platen 5 (driving the punches comprises moving the punches toward the holes and into the fiber-cement panel until the punches eject the plugs from the panel).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes and the claimed spacing of the punches. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell and Vinson et al., one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Neither Kober, Quinnell nor Vinson et al. specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein

cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a punch assembly and a support assembly having the claimed punch/hole clearance in the process of Kober in view of Quinnell and Vinson et al. as taught by Hugo to provide a punching apparatus with reduced punch wear and breakage as taught by Hugo. Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph [0006].

Specifically, paragraph [0006] of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

With respect to Claims 29 and 30, neither Kober, Quinnell, nor Vinson et al. specifically teaches providing a plurality of biasing elements coupled to the punch assembly wherein the biasing elements are compressible, resilient member projecting from the punch plate adjacent to the punches and withdrawing the punches from the fiber-cement panel comprises pressing resilient biasing members against the fiber-cement panel adjacent to at least a subset of the plurality of punches when the punches penetrate into the fiber-cement panel. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 wherein the punch 15 is surrounded by an elastomerically deformable, annular insert 50 having a striking surface 54 for engaging the upper surface of the workpiece W during punching (providing a plurality of biasing elements coupled to the punch assembly, the biasing elements being compressible, resilient members projecting from the punch plate adjacent to a punch; and withdrawing the punches from the fiber-cement panel by pressing the biasing elements against the fiber-cement panel proximate to at least a subset of the punches as the punches penetrate the fiber-cement panel) (column 1,

lines 5-9; column 2, lines 38-52; column 3, lines 33-54; claims). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to surround the pins with annular inserts in the process of Kober in view of Quinnell and Vinson et al. as taught by Hugo to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph [0006]. Specifically, paragraph [0006] of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kober (U.S. Patent No. 3,962,941) in view of Quinnell (U.S. Patent No. 4,580,374), applicant's admitted prior art (see Specification, Background section, [0002] and [0006]), and Kober II (US Patent No. 3,914,079).

With respect to Claim 31, Kober teaches a method for perforating and trimming boards of filamentary material (a method of fabricating) including providing a fiber plate 3 made using asbestos fibers held together by a hydraulic binder such as cement; depositing the fiber plate 3 on one of a series of trays 7 linked together into an endless

chain passing about terminal rollers; passing each of the trays 7 into a press 1 comprising an upper platen 9 having a plurality of punch means 8 for punching an array of holes in the fiber plate 3 (between a punch assembly; the punch assembly having a punch plate and a plurality of punches coupled to the punch plate and a plurality of punches projecting from the punch plate) and a lower platen 5 for supporting the fiber plate 3 during perforating and trimming (a support assembly); and lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (the support assembly having a support plate with a plurality of holes) (column 1, lines 13-17; column 3, lines 12-27; column 4, lines 19-39). As illustrated in Figures 1 and 2, Kober further teaches lowering all of the punch means 8 into fiber plate 3 at substantially the same time (forming a plurality of apertures in the fiber-cement panel at least substantially simultaneously by driving the punches at least substantially simultaneously through the fiber-cement panel).

With regard to the concept of driving the punches through only a portion of the fiber-cement panel without passing the punches completely through the panel, the examiner stipulates that Kober indirectly teaches this concept as further discussed hereafter. Kober further teaches that the upper platen 9 is provided with trimming blades 25 whose cutting edges are engageable against lead anvil strips 26 inset in the trays 7 to trim the edges all around the fiber plate 3 as the array of holes are punched through the fiber plate 3 (column 3, line 65 - column 4, line 2). As illustrated in the Figures, Kober further teaches that the punch means 8 are slightly shorter, but definitely

no longer, in length than the trimming blades 25. If the travel of the trimming blades 25 and the upper platen 9 stops when trimming blades 25 engage against lead anvil strips 26 as taught and the punch means 8 are slightly shorter in length than the trimming blades 25, the punch means 8 in the process of Kober would obviously only pass through a portion of the fiber plate 3 and would obviously be prevented from passing completely through the fiber plate 3 as claimed.

Moreover, with respect to teaching that the penetration does not pass completely through, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obvious recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

Kober does not specifically teach that the boards are capable of being used as soffit boards. However, Quinnell teaches a soffit and fascia system comprising cement-based asbestos boards for use as the soffit boards including a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use the punching process of Kober to form the soffit boards taught by Quinnell to provide a rapid and economical method for producing a low cost soffit and fascia system.

Kober does not appear to expressly teach engaging an active drive assembly with the fiber-cement panel, wherein the active drive assembly has a first drive member, contacting one surface of the fiber- cement panel and a second drive member opposing the first drive member contacting an opposite surface of the fiber-cement panel; moving the first and second drive members such that the drive members feed the fiber-cement panel placing a fiber-cement panel between a punch assembly.

Kober II teaches utilizing a belt 8 and a band 9 to place a fiber mat into a press (engaging an active drive assembly with the fiber-cement panel, wherein the active drive assembly has a first drive member, contacting one surface of the fiber- cement panel and a second drive member opposing the first drive member contacting an opposite surface of the fiber-cement panel; moving the first and second drive members such that the drive members feed the fiber-cement panel placing a fiber-cement panel between a punch assembly) (see col. 2, line 51 through col. 3, line 30).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Kober II's drive assemblies in the process of Kober in order to improve handling in a continuous operation (see col. 1, lines 37-42).

Kober in view of Quinnell lack or do not expressly disclose performing the punching on a cured fiber-cement panel.

Admission discloses that it is well known to cure a fiber-cement composition and then performing cutting, which would include punching (see Specification, Background section, [0002] and [0006]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Admission's method of punching after curing in Kober's process of punching fiber cement boards in order to overcome problems of drilling, to provide larger opening (see Specification, Background section, [0002] and [0006]), and because Kober is not limited to pre-cured or post-cured punching.

With respect to Claim 32, the discussion of Kober in view of Quinnell, applicant's admitted prior art, and Kober II as applied to claim 31 above applies herein.

Kober and Quinnell do not appear to explicitly teach that the penetration depth is within the claimed range (e.g., 0.0625-0.1875 inches (without passing completely through). However, in this regard, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

Claims 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable Kober (U.S. Patent No. 3,962,941) in view of Quinnell (U.S. Patent No. 4,580,374), applicant's admitted prior art (see Specification, Background section, [0002] and [0006]), and Kober II (US Patent No. 3,914,079) as applied to Claims 31 and 32 above, and further in view of Hugo (U.S. Patent No. 4,246,815).

With respect to Claims 33-35, the discussion of Kober and Quinnell as applied to claim 31 above applies herein.

Kober further teaches that each of the punch means 8 comprises a pin 10 (the plurality of punches) carried on a plate 9b removably secured to the upper portion 9a (a flat punch plate) of the upper platen 9 (the punch assembly) (the punch assembly includes a flat punch plate and the plurality of punches project from the punch plate, the punches being spaced apart from one another, and the punches having a first end attached to the punch plate, a second end opposite the first end with a contact face, and a first diameter) (column 3, lines 24-27; Figures). Kober further teaches that the lower platen 5 (the support assembly) includes a plate (a flat support plate) having attached thereto a plurality of short upstanding tubes 18 each having a downwardly flaring passage 19 that terminates at its upper end at a bore 11 (the plurality of holes), for receiving a punched plug, having an inner diameter substantially equal to the outer diameter of the pins 10 (punches) (the support assembly includes a flat support plate and the plurality of holes extend through the support plate, each hole being aligned with a corresponding punch projecting from the punch plate, and the holes having a second diameter to provide a radial punch/hole clearance between the punches and the holes) (column 3, lines 28-59; Figures). As discussed above, Kober further teaches that lowering the upper platen 9 such that the punch means 8 punch perforations in the fiber plate and drive plugs out of bores 11 located in the lower platen 5 (driving the punches comprises moving the punches toward the holes and into the fiber-cement panel until the punches eject the plugs from the panel).

Although Kober teaches the basic claimed punch assembly / support assembly arrangement, Kober does not specifically teach the claimed diameters of the punches and holes and the claimed spacing of the punches. However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell, one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

Neither Kober nor Quinnell specifically teaches that the radial punch/hole clearance between the punches and the holes is approximately 0.04 inches to 0.07 inches (i.e., about 10% to about 40% of the second diameter of the holes and about 16% to about 64% of the first diameter of the punches) or is approximately 4% to 30% of the second diameter of the holes or approximately 4% to 40% of the thickness of the panel as claimed. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15

(punches) with a extended nib 16 of constant diameter and a tip 17 (column 1, lines 5-9; column 2, lines 38-52; claims).

Kober, Quinnell, and Hugo do not appear to explicitly teach that the claimed absolute and relative clearance is within the claimed range (e.g., 0.04 inches to 0.07 inches, approximately 4% to 30% of the second diameter of the holes, or approximately 4% to 40% of the thickness of the panel). However, in this regard, Hugo further teaches having a larger die at the bottom to allowed conical plug ejection (see Fig. 3; col. 2, lines 46-50; and col. 3, lines 8-11). As such, Hugo obvious recognizes that absolute and relative clearance is a result-effective variable. Since absolute and relative clearance would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum absolute and relative clearance applied in the process of Kober, Quinnell, and Hugo through routine experimentation based upon optimum plug ejection.

It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a punch assembly and a support assembly having the claimed punch/hole clearance in the process of Kober in view of Quinnell as taught by Hugo to provide a punching apparatus with reduced punch wear and breakage as taught by Hugo. Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph [0006]. Specifically, paragraph [0006] of the applicant's original disclosure admits that it is

known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

With respect to Claims 36-37, the discussion of Kober and Quinnell as applied to claim 31 above applies herein.

Neither Kober nor Quinnell specifically teaches providing a plurality of biasing elements coupled to the punch assembly wherein the biasing elements are compressible, resilient member projecting from the punch plate adjacent to the punches and withdrawing the punches from the fiber-cement panel comprises pressing resilient biasing members against the fiber-cement panel adjacent to at least a subset of the plurality of punches when the punches penetrate into the fiber-cement panel. However, Hugo teaches a power press for punching thick workpieces of metal comprising a bed 10 having a die plate 20 (a flat support plate) mounted thereon with a punch receiving opening or die cavity 21 (holes) therein cooperating with a reciprocating ram 11 (a flat punch plate) coupled to a drive 12 having a punch 15 (punches) with a extended nib 16 of constant diameter and a tip 17 wherein the punch 15 is surrounded by an elastomerically deformable, annular insert 50 having a striking surface 54 for engaging the upper surface of the workpiece W during punching (providing a plurality of biasing elements coupled to the punch assembly, the biasing elements being compressible, resilient members projecting from the punch plate adjacent to a punch; and withdrawing the punches from the fiber-cement panel by pressing the biasing elements against the fiber-cement panel proximate to at least a subset of the punches as the punches

penetrate the fiber-cement panel) (column 1, lines 5-9; column 2, lines 38-52; column 3, lines 33-54; claims). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to surround the pins with annular inserts in the process of Kober in view of Quinnell as taught by Hugo to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Note that, although Hugo only teaches punching metal workpieces (see claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph [0006]. Specifically, paragraph [0006] of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

(10) Response to Argument

In Appellant's Arguments section VII(C), pages 15 and 16, Appellant argues that "first drive member" and "second drive member" are provided for by Appellant's Specification because roller assemblies are disclosed in paragraphs [0035]-[0037] and fig. 5. In response, the Examiner acknowledges the disclosure of roller assemblies by Appellant. However, such disclosure is moot because roller assemblies are not commensurate in scope with the claim terminology "first active drive member" and a

"second drive member" lines 4-6 of Claim 31. Thus, other drive members such as clamps are within the added claim terminology but not within Appellant's disclosure.

In Appellant's Arguments section VII(D)(1), pages 16 and 17, Appellant argues that Kober does not teach the claimed limitation of Claims 18 and 19 of passing punches approximately 0.0625-0.1875 inches through a board having a thickness of approximately 0.25-0.31625 inches because liquid content of Kober's board would require punch penetration through the entire board as indicated in the declaration under 37 CFR 1.132 filed 28 January 2008. In response, the Examiner notes that Applicant's Admission is relied upon for disclosure that it is well known to cure a fiber-cement composition and then performing cutting, which would include punching (see Specification, Background section, [0002] and [0006]). Moreover, since the Declaration does not contain an indication of an event, act, or occurrence that has actually taken place, the Declaration, in general, is accorded opinion evidence status as it is, at best, a statement expressing what the person making it thinks, believes, or infers with regard to certain facts. Appropriate weight is given to the opinion evidence. However, no factual evidence has been made of record showing lack of fracture and lack of plug ejection of panels at different levels of being cured or uncured. The absence of factual support for the opinion makes it difficult to accord the opinion significant weight in overcoming the rejection.

In Appellant's Arguments section VII(D)(1), page 18, Appellant argues that Kober does not teach the claimed limitation of Claims 18 and 19 of passing punches approximately 0.0625-0.1875 inches through a board having a thickness of

approximately 0.25-0.31625 inches because the lead anvil strip 26 would eventually develop a depression to allow the shorter pins 10 to pass into holes 11 while longer trimming blade rests in the strip 26's depression. The Examiner relies upon Kober to teach the upper platen 9 stops when trimming blades 25 engage against lead anvil strips 26 and before punch means 8 have fully passed through fiber plate 3 at least until such depressions occur. If the travel of the trimming blades 25 and the upper platen 9 stops when trimming blades 25 engage against lead anvil strips 26 as taught and the punch means 8 are slightly shorter in length than the trimming blades 25, the punch means 8 in the process of Kober would obviously only pass through a portion of the fiber plate 3 and would obviously be prevented from passing completely through the fiber plate 3 as claimed. It is noted that such analysis of Kober's illustration is offered principally to show the figures may not be relied upon to show a requirement of complete penetration of the board by pins 10.

In Appellant's Arguments section VII(D)(2), page 19, Appellant argues that Kober does not teach the claimed limitation of Claims 18 and 19 of passing punches approximately 0.0625-0.1875 inches through a board having a thickness of approximately 0.25-0.31625 inches because Kober contains a teaching of passing the punch through the board. In response, the Examiner notes that Kober teaches to optimize punch depth in col. 4, lines 24-35 by requiring platen 9 and punch 10 to descend until perforations are formed and plugs are driven out. Such teachings do not require an arbitrary depth. Instead, the items descend sufficiently to cause the desired result of driving out the plugs of board material. As recited above:

Kober and Quinnell do not appear to explicitly teach that the penetration depth is within the claimed range (e.g., 0.0625-0.1875 inches (without passing completely through)). However, in this regard, Kober further teaches that the platen 9 descends so that the pins punch perforations in the mat and drive the plugs out of the bore 11 (see col. 4, lines 24-35). As such, Kober obviously recognizes that penetration depth is a result-effective variable. Since penetration depth would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum penetration depth applied in the process of Kober and Quinnell through routine experimentation based upon driving out the plugs.

In Appellant's Arguments section VII(D)(3), pages 19 and 20, Appellant argues it would not have been obvious to one of ordinary skill in the art at the time the invention was made to use Applicant's Admission for punching holes in a cured board (see Specification, Background section, [0002] and [0006]) since Applicant's background information indicates that a sheet metal punch is not successful in punching cured boards due to punch pin wear and delamination of the punched panel. In response, the Examiner notes Appellant's indication that lack of success is related to specific clearances which are not recited in the Claim 19 being argued, and no factual evidence has been made of record correlating a critical clearance and Kober's clearance. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Moreover, it is not clear that some degree of punch

wear and breakage does not occur with Applicant's process or that some degree of punch wear and breakage is intolerable in contrast to the benefits of producing the desired product. Moreover, Kober is relied upon for providing a punching apparatus, and Applicant's Admission teaches punching cured boards. Thus, concerns for the limitations of an alternative apparatus are moot.

In Appellant's Arguments section VII(D)(4), pages 19 and 20, Appellant argues it would not have been obvious to one of ordinary skill in the art at the time the invention was made to punch holes as taught by Kober in order to make the soffits of Quinnell since Quinnell avoids punching holes in a soffit because the product would not be a low-cost manufacturing system. In response, the Examiner relies upon Kober to teach punching holes in a board and Quinnell is relied upon to teach that a fascia system comprising cement-based asbestos boards for use as the soffit boards includes a plurality of ventilation slots that are formed in each soffit board (column 1, lines 15-28; column 2, lines 25-38). As Quinnell is not modified to punch the fiber-cement panels, lack of motivation to do so is moot. Instead, Kober is modified to create the board used as a soffit in Quinnell. Moreover, obviousness would not hinge solely on cost since additional factors such as customization and minimization of additional components, such as molded inserts of Quinnell, would promote the use of Kober's punch.

In Appellant's Arguments section VII(E)(1), pages 21 and 22, Appellant argues that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kober's radial punch-hole clearances because the ability to punch clean holes would have been impaired; Filamentary mats would have pulled

into the clearance gaps. In response, since Applicant's Admission teaches punching cured boards, concerns for the limitations of uncured boards are moot. Moreover, Kober teaches optimizing the size of the perforation diameter, pins, and receiving tubes 18 as recited above:

> However, in this regard, Kober does teach that the perforation diameter may be changed by replacing plate 9b with another plate having differently sized pins 10 and even differently set blades 25, by replacing the plate 28, or by replacing the tubes 18 (column 4, lines 11-16). As such, Kober obviously recognizes that the arrangement of the pins 10 and the tubes 18 is a result-effective variable. Since the arrangement of the pins 10 and the tubes 18 is a result-effective variable in the process of Kober in view of Quinnell, one of ordinary skill in the art would have obviously determined the optimum arrangement of the pins 10 and the tubes 18 through routine experimentation based upon the desired amount of ventilation, the thickness and type of fiber plate, etc.

In Appellant's Arguments section VII(E)(2), page 23, Appellant argues that Claims 38 and 42 are non-obvious because of the punch penetration depth as argued with respect to Claim 19. Such arguments with respect to optimization of punch depth are addressed above with respect to Claim 19. However, the Examiner notes that Claim 19 recites board thickness and punch penetration of 0.25-0.31625 inches and 0.0625-0.1875 inches, respectively, whereas Claims 38 and 42 only require a punch penetration less than the board thickness, or "driving the punches through only a portion

of the thickness of the fiber-cement panel." Thus, Claims 38 and 42 only require incomplete punch depth. If it is held that Kober does require complete panel punching, the claimed punch depth and prior art punch depth would not over lap but would be close enough that one skilled in the art would have expected them to have the same properties (see MPEP § 2144.05(I)). (It is noted that Claims 38, 39, 41-43, and 45-48 only require a punch penetration less than the board thickness.)

In Appellant's Arguments section VII(E)(3), pages 23 and 24, Appellant argues that Claim 49 is non-obvious because Hugh's annular insert would mar Kober's uncured mats and would mar cured mats, and PacTool International's biasing elements have compressibility properties sufficient to not mar cured panels. In response, since Applicant's Admission teaches punching cured boards, concerns for marring of uncured boards are moot. Moreover, the benefits of creating the product would be at least as valuable as the chance of damaging the product as implied by Hugo's use of the inserts to provide a punching arrangement having a substantially reduced breakage rate in the punching of workpieces (see specifically column 1, lines 27-33 of Hugo). Moreover, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., specific compressibility properties) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). (It is noted that Claims 50 and 52-55 only require a punch penetration less

than the board thickness, Claim 49 does not limit punch penetration depth, and Claim 51 requires punching completely through the fiber-cement board.)

In Appellant's Arguments section VII(E)(3), page 24, Appellant argues that Claim 49 is non-obvious because Hugh's annular insert is solely designed for punching thick metal workpieces. In response, the Examiner notes that although Hugo only teaches punching metal workpieces (see Hugo, claims) and does not specifically teach punching fiber-cement sheets, Hugo must be considered analogous prior art when taken in view of the applicant's admitted prior art in paragraph [0006]. Specifically, paragraph [0006] of the applicant's original disclosure admits that it is known in the art to use sheet metal punches to form holes in fiber-cement sheets, and therefore the examiner stipulates that sheet metal punches and processes would be at least relatively pertinent to the applicant's particular problem.

In Appellant's Arguments section VII(F), pages 24 and 25, Appellant argues that Claims 24 and 25 are non-obvious because of the punch penetration depth as argued with respect to Claim 19. Such arguments with respect to optimization of punch depth are addressed above with respect to Claim 19.

In Appellant's Arguments section VII(G), page 25, Appellant argues that Claims 26-30 are non-obvious because of the same reasons as Claim 19. Such arguments are addressed above with respect to Claim 19.

In Appellant's Arguments section VII(H), pages 25 and 26, Appellant argues that Claim 31 is non-obvious because of the punch penetration depth as argued with respect to Claim 19. Such arguments with respect to optimization of punch depth are

addressed above with respect to Claim 19. Moreover (as noted with respect to Claims 38 and 42 above), the Examiner notes that Claim 19 recites board thickness and punch penetration of 0.25-0.31625 inches and 0.0625-0.1875 inches, respectively, whereas Claim 31 only require a punch penetration less than the board thickness, or "without passing the punches completely through the panel." Thus, Claim 31 only requires incomplete punch depth. If it is held that Kober does require complete panel punching, the claimed punch depth and prior art punch depth would not over lap but would be close enough that one skilled in the art would have expected them to have the same properties (see MPEP § 2144.05(I)).

In Appellant's Arguments section VII(H), page 26, Appellant argues with respect to Claim 31 that it would not have been obvious to one of ordinary skill in the art at the time the invention was made to punch holes as taught by Kober in order to make the soffits of Quinnell since Quinnell avoids punching holes in a soffit because the product would not be a low-cost manufacturing systems as argued with respect to Claim 19. Such arguments are addressed above with respect to Claim 19.

In Appellant's Arguments section VII(I), pages 26 and 27, Appellant argues that Claims 33-37 are non-obvious because of the punch penetration depth as argued with respect to Claim 19. Such arguments with respect to optimization of punch depth are addressed above with respect to Claim 19. Moreover (as noted with respect to Claims 38 and 42 above), the Examiner notes that Claim 19 recites board thickness and punch penetration of 0.25-0.31625 inches and 0.0625-0.1875 inches, respectively, whereas Claims 33-37 only require a punch penetration less than the board thickness via their

dependency to Claim 31's limitation of "without passing the punches completely through the panel." Thus, Claims 33-37 only require incomplete punch depth. If it is held that Kober does require complete panel punching, the claimed punch depth and prior art punch depth would not over lap but would be close enough that one skilled in the art would have expected them to have the same properties (see MPEP § 2144.05(I)).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Patrick Butler/

Examiner, Art Unit 1791

Conferees:

/Christina Johnson/

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